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IS 1590 (2000): Laboratory Glassware - Glass Filter Flasks
[CHD 10: Glassware]

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(पहला पुनरीक्षण)

Indian Standard

LABORATORY GLASSWARE — GLASS FILTER FLASKS — SPECIFICATION

(First Revision)

ICS 71.040.20

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

January 2000

Price Group 3

Laboratoryware and Related Apparatus Sectional Committee, CHD 11

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Laboratoryware and Related Apparatus Sectional Committee had been approved by the Chemical Division Council.

This standard was first published in 1960, based on IND/S/MED/5808, issued by Ministry of Defence, Government of India, and MED/TDES/843, issued by British Standards Institution, UK. However, to bring it at par with the present International Standard, the standard has been revised.

The composition of the technical committee responsible for the formulation of this standard is given in Annex C.

In this revision, the capacities of the flasks have been modified. For simplicity of manufacture, pear-shaped flasks have been removed. More varieties in the shape and size of side-arms have been introduced.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

LABORATORY GLASSWARE — GLASS FILTER FLASKS — SPECIFICATION

(First Revision)

1 SCOPE

This standard prescribes requirements and methods of sampling and test for glass filter flasks suitable for general laboratory use.

2 REFERENCES

The following standards contain provisions which through reference in this text, constitute provision of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

IS No.	*Title*
1382 : 1981	Glossary of terms relating to glass and glassware (*first revision*)
2303(Part 1/ Sec 1) : 1994	Method of grading glass for alkalinity : Part 1 Hydrolytic resistance, Section 1 Hydrolytic resistance of glass grains at 98°C — Method of test and classification (*first revision*)
4426 : 1992	Methods of sampling laboratory glassware
5165 : 1969	Interchangeable conical ground-glass joints

3 TERMINOLOGY

3.1 For the purpose of this standard, the definitions given in IS 1382 and the following shall apply.

3.1.1 *Body*

The part of a flask which holds the major or main portion of its content.

3.1.2 *Side-Arm*

A tube fused or fixed with the body of the flask for vacuum connnection.

4 REQUIREMENTS

4.1 Material

The filter flasks shall be made of transparent glass as free as possible from strain and visual objects. Amber or other-coloured glass may be used for special purpose.

4.2 Shape

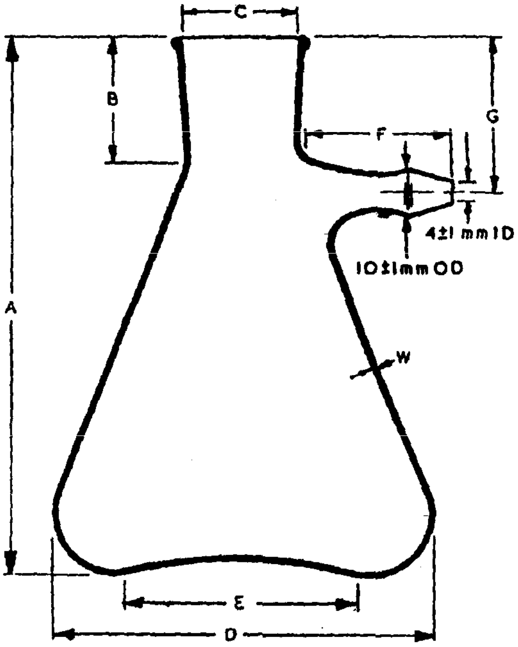
Filter flasks shall be conical. The base of the flasks shall be so constructed that they stand vertically without rocking or spinning, when placed on a level surface.

4.3 Capacity

The filter flasks shall be of the following nominal capacities:

100 ml, 250 ml, 500 ml, 1 000 ml and 2 000 ml.

4.3.1 Filter flasks of nominal capacity 100 ml to 2 litres shall be of conical shape as shown in Fig. 1.



All dimensions in millimetres.

FIG. 1 FILTER FLASK, CONICAL SHAPED

4.3.2 The filter flasks shall be designated by their nominal capacities. The actual capacity to overflow at the vacuum connection shall be designed to exceed the nominal capacity by about 20 percent.

4.4 Dimensions

4.4.1 *General Dimensions*

The flask shall comply with the dimensions given in Table 1. The dimensions given in Table 2 are the recommended dimensions. Both the tables shall be read with Fig. 1.

4.4.2 *Tolerances*

The tolerance on nominal dimensions shall be ±5 percent of the nominal thickness. In case the tolerance so calculated falls below 2 mm, it shall be taken as 2 mm, and in case it is found to be more than 5 mm, it shall be limited to 5 mm.

4.5 Neck

The top of the neck shall be suitably strengthened as shown in Fig. 1. The neck may be slightly tapered. Alternatively, it may be manufactured with an interchangeable joint of appropriate size selected from IS 5165.

4.6 Side-Arm

The side-arm shall be placed just below the finish of the neck (*see* Fig. 1).

Three types of side-arms are described, as follows:

a) *Tubulure side-arm* — This shall be constructed as shown in Fig. 2.

b) *Integral side-arm* — This may be provided
  - with an olive end (*see* Fig. 3)
  - with a corrugated tubulation (*see* Fig. 4; *see also* Table 3)
  - with a glass round thread (*see* Fig. 5)

c) *Detachable side-arm*
  - A typical arrangement with a resilient grommet is shown in Fig. 6. A detachable side-arm may also be provided with an appropriate glass round thread.

Table 1 Essential Dimensions

(*Clause* 4.4.1)

All dimensions in millimetres.

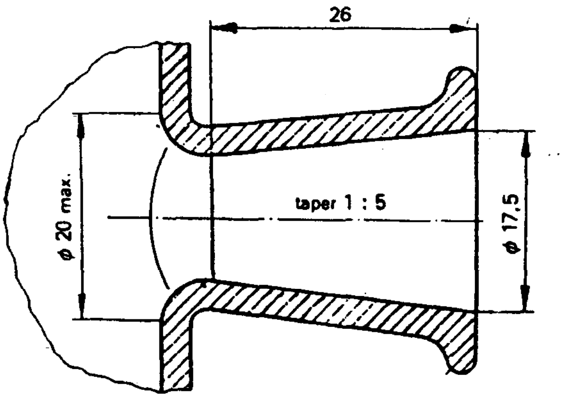
Essential Dimensions	Nominal Capacity				
	100 ml	250 ml	500 ml	1 000 ml	2 000 ml
(1)	(2)	(3)	(4)	(5)	(6)
Wall thickness, *Min* at maximum outside diameter (*D*), *W*	1.8	1.8	2.0	2.0	2.5
Radius of curvature of base, *r*, *Min*	12	12	15	20	23

Table 2 Recommended Dimensions

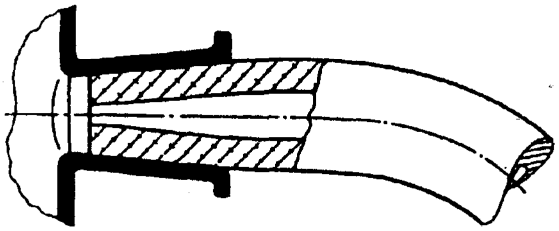
(*Clause* 4.4.1)

All dimensions in millimetres.

Recommended Dimensions	Nominal Capacity				
	100 ml	250 ml	500 ml	1 000 ml	2 000 ml
(1)	(2)	(3)	(4)	(5)	(6)
Overall height, *A*	105	145	175	230	275
External diameter, *D*	70	85	105	135	165
Internal diameter at top of the neck, *C*	24	35	35	45	45



a) Tubulure Side-Arm



b) Illustration for Use

NOTE — The method of use of filter flasks with tubulure side-arm is as follows:

The vacuum rubber tubing is simply inserted into the tubulure side-arm as shown in the above sketch.

The connection is sufficiently tight due to the outside pressure.

The use of tubulure side-arms of filter flasks presents two main advantages:

- the risk of breaking and, thus, the danger of injury to the operator is minimized;
- vacuum connection or disconnection can very easily be made by one-hand operation.

All dimensions in millimetres.

FIG. 2 TUBULURE SIDE-ARM WITH ILLUSTRATION FOR USE

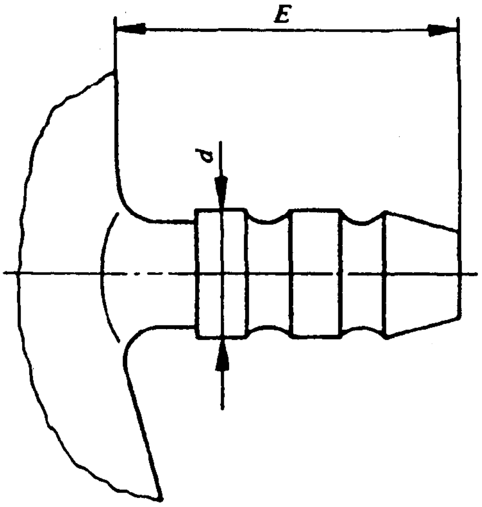


FIG. 4 INTEGRAL SIDE-ARM WITH CORRUGATED TUBULATION

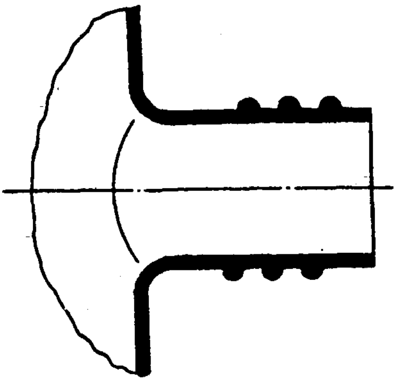
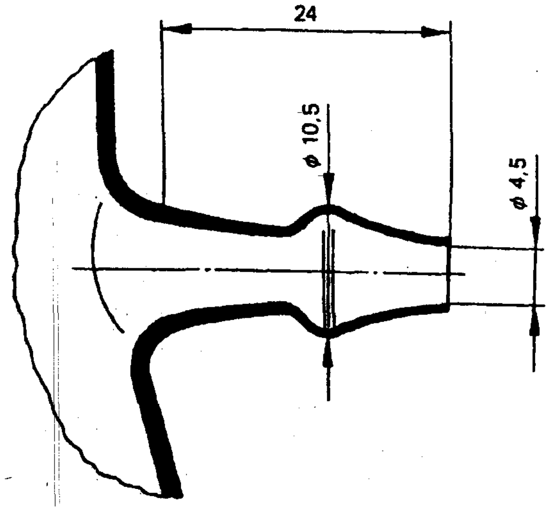


FIG. 5 INTEGRAL SIDE-ARM WITH GLASS ROUND THREAD



All dimensions in millimetres.

FIG. 3 INTEGRAL SIDE-ARM WITH OLIVE ENDING

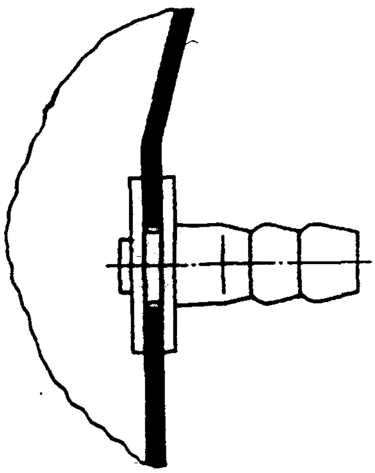


FIG. 6 DETACHABLE SIDE-ARM

Table 3 Recommended Dimensions for Integral Side-Arm with Corrugated Tubulation

[*Clause* 4.6(b)]

All dimensions in millimetres.

Dimension	Nominal Capacity				
	100 ml	250 ml	500 ml	1 000 ml	2 000 ml
E	27	27	27	27	32
d	10	10	10	10	10

4.7 Limit of Alkalinity

The glass of the filter flask shall conform to Class HGB 2, when graded according to the method prescribed in IS 2303 (Part 1/Sec 1).

4.8 Resistance to Pressure

Filter flasks shall be so constructed as to withstand a pressure differential of 2 bar when tested in accordance with the test method specified in Annex A.

4.9 Thermal Shock Endurance

The filter flasks shall pass the test prescribed in Annex B.

5 PACKING AND MARKING

5.1 Packing

The filter flasks shall be packed as agreed to between the purchaser and the supplier.

5.2 Marking

Each filter flask shall be legibly and indelibly marked with the following information:

a) Indication of the source of manufacture, and
b) Nominal capacity followed by letters 'ml'.

5.2.1 *BIS Certification Marking*

The filter flasks may also be marked with the Standard Mark.

5.2.1.1 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act*, 1986 and the Rules and Regulations made thereunder. The details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

6 SAMPLING AND CRITERIA FOR CONFORMITY

Representative samples of filter flasks shall be drawn and adjudged for criteria for conformity in accordance with IS 4426.

ANNEX A

(*Clause* 4.8)

METHOD OF TEST FOR PRESSURE RESISTANCE

The filter flask should be tested in a pressure vessel connected to a suitable water supply and fitted with a pressure gauge of appropriate range. Alternatively, pressure may be applied by means of a ram pump connected to a water reservoir with a release valve discharging back to the reservoir. A suitable arrangement is shown in Fig. 7. Quick-action fastening for the lid of the pressure vessel is desirable to avoid waste of time in tightening ordinary nuts and bolts.

The filter flask shall be closed by appropriate means, for example stoppers. To ensure submersion, it is necessary to hold the filter flask in some suitable device or, alternatively, weights wrapped in paper or cloth may be placed inside it.

After the filter flask is placed in position and the lid fastened, the pressure vessel shall be filled with water, and the pressure brought up to two bar gauge pressure, and maintained at the pressure for one minute.

A test of this duration indicates that a vessel passing it could be expected to withstand indefinitely a pressure differential (external-internal) of one bar, provided that the glass is not abraded, bruised or otherwise damaged in subsequent service.

Nevertheless, when the flask is in use, precautions against its collapse under pressure should be observed.

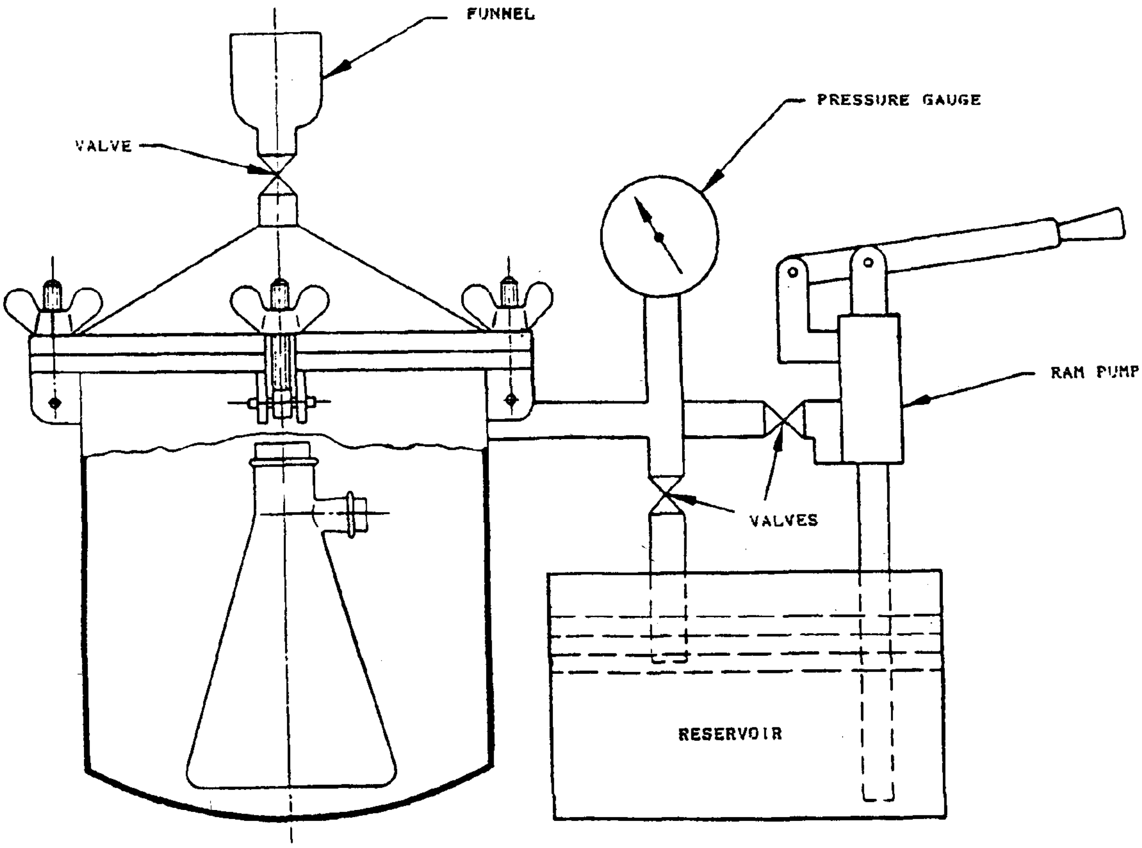


FIG. 7 PRESSURE RESISTANCE TEST RIG FOR FILTER FLASK

ANNEX B

(*Clause* 4.9)

TEST FOR THERMAL SHOCK ENDURANCE

B-1 PROCEDURE

B-1.1 Place the requisite number of flasks in boiling water-bath in such a way that they remain completely immersed in the bath. Maintain the flasks at 98°C ± 1°C for at least 15 minutes.

B-1.1.1 Remove the flasks filled with hot water and immerse them in another water-bath maintained at 27°C ± 1°C. The process of transfer shall be completed in 15 ± 2 sec. The flasks shall remain immersed to a level just below the side-arm for two minutes, and no cold water should be allowed to enter them.

B-1.2 The samples shall be taken to have complied with the requirements of this test if they do not break or suffer any damage during the test.

ANNEX C

(Foreword)

COMMITTEE COMPOSITION

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